YPLL — Continued

the nation's, the proportion of total homicide-attributable YPLL in Michigan involving blacks is 68% compared with 44% in the nation. These differences largely reflect the higher homicide rate for blacks in Michigan than for the U.S. black population. Black homicide victims are also slightly younger than white victims in Michigan; in 1985, they had an average of 33 YPLL per homicide death, compared with 31 for whites.

Examining descriptive data such as those presented here is important for public health agencies addressing homicide. In addition, analytic studies of potentially modifiable risk factors are needed. Because 67% of Michigan's homicides in 1985 occurred in the Detroit area, these data highlight the importance of implementing and evaluating prevention measures, such as the recently implemented handgun ordinance, in Detroit. At the state level, excess homicide has led to plans to integrate health department and police data bases for surveillance of homicide. These data may help define factors associated with excess homicide in Michigan.

References

1. CDC. Premature mortality due to homicides—United States, 1968–1985. MMWR 1988; 37:543–5.
2. CDC. Premature mortality in the United States: public health issues in the use of years of potential life lost. MMWR 1986;35(suppl 2S).
3. CDC. Premature mortality due to suicide and homicide—United States, 1984. MMWR 1987; 36:531–4.

Recommendations of the Immunization Practices Advisory Committee

Measles Prevention: Supplementary Statement

INTRODUCTION

Since measles vaccine was introduced in the United States in 1963, the reported incidence of measles has decreased 99%, and indigenous measles transmission has been eliminated from most of the country. However, the goal to eliminate measles by October 1982 has not been met. Between 1981 and 1987, a low of 1497 (1983) to a high of 6282 (1986) cases were reported annually (*1*).

Two major types of outbreaks have occurred recently in the United States: those among unvaccinated preschool-aged children, including children younger than the recommended age for routine vaccination (i.e., 15 months), and those among vaccinated school-aged children (*2*). Large outbreaks among unvaccinated preschool-aged children have occurred in several inner-city areas. In these outbreaks, up to 88% of cases in vaccine-eligible children 16 months to 4 years of age were unvaccinated; as many as 40% of all cases occurred in children <16 months of age. Surveys of immunization levels in areas where these outbreaks occurred indicate that only 49%–65% of 2-year-olds had received measles vaccine (*3*).

Many outbreaks have occurred among school-aged children in schools with vaccination levels above 98%. These outbreaks have occurred in all parts of the country. Attack rates in individual schools have been low (1%–5%), and the calculated vaccine efficacy has been high. Primary vaccine failures (i.e., the approximately

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2%–10% of vaccinees who fail to seroconvert after measles vaccination) have played a substantial role in transmission. In many of these outbreaks, children vaccinated at 12–14 months of age have had higher attack rates than those vaccinated at older ages (*4*).

In a few outbreaks (*5,6*), persons vaccinated in the more distant past, independent of age at vaccination, have been at increased risk for disease. However, no conclusive data indicate that waning vaccine-induced immunity itself has been a major problem.

EVALUATION OF THE CURRENT MEASLES ELIMINATION STRATEGY

The current measles elimination strategy calls for administration of one dose of measles vaccine at 15 months of age (*7*). A documented history of vaccination at or after 12 months of age, however, is considered appropriate vaccination. High immunization levels, along with careful surveillance and aggressive outbreak control, are the three essential elements of this strategy. The Immunization Practices Advisory Committee (ACIP) has periodically reviewed the current strategy and progress toward measles elimination (*7*). At a recent meeting, the ACIP again reviewed the epidemiology of measles in the United States as well as recommendations, made by a group of consultants convened by CDC in February 1988, for modification of the measles elimination strategy.

To increase vaccine coverage among preschool-aged children in inner-city areas, the ACIP considered it essential that research be conducted to determine ways to increase vaccine delivery. A variety of additions and/or changes in the current strategy were considered, including a routine two-dose measles vaccination schedule and a one-time mass revaccination for school-aged children. Two new strategies were recommended and are described below (Table 1).

NEW RECOMMENDATIONS

Changes in vaccination schedule in areas with recurrent measles transmission among preschool-aged children

To improve immunity levels in high-risk children <15 months of age, the ACIP recommends that a routine two-dose vaccination schedule for preschoolers be implemented in areas with recurrent measles transmission (i.e., counties with more than five reported cases among preschool-aged children during each of the last 5 years). If recurrent measles transmission is occurring in defined parts of a county, local officials may elect to implement the routine two-dose schedule selectively in

TABLE 1. New recommendations for measles vaccination

Areas with recurrent measles transmission*	
Two-dose schedule	
First dose:	Monovalent measles vaccine at 9 months of age or first visit thereafter
Second dose:	MMR at 15 months of age
If a routine two-dose schedule is impractical, then MMR should be given routinely at 12 months of age.	
Outbreaks in schools	
Revaccinate all persons who received their most recent vaccination before 1980. If this is impractical, then children vaccinated before 15 months of age should be revaccinated.	

*County reporting more than five cases of measles among preschool-aged children during each of the previous 5 years.

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those parts. Health authorities in other urban areas that have experienced recent outbreaks among unvaccinated preschool-aged children may also consider implementing this policy. The first dose of measles vaccine should be administered at age 9 months or at the first health-care contact thereafter. Infants vaccinated before their first birthday should receive a second dose at or about 15 months of age. Single-antigen (monovalent) measles vaccine should be used for infants <1 year of age, and measles, mumps, and rubella vaccine (MMR), for persons vaccinated on or after the first birthday. Although some data suggest that children who do not respond to the first dose administered at a young age may have an altered immune response when revaccinated at an older age (*8*), there are no data to suggest that such children are not protected from measles (*9*).

If resource constraints do not permit a routine two-dose schedule, an acceptable alternative is to lower the age for routine vaccination to 12 months in those areas using one dose of MMR. If children also need diphtheria and tetanus toxoids and pertussis vaccine (DTP) and oral polio vaccine (OPV), these vaccines can be administered simultaneously with measles vaccine or MMR.

Changes in outbreak-control strategies for school-based outbreaks

Because of the prominent role that persons with primary vaccine failure are playing in measles transmission, the ACIP recommends the institution of some form of revaccination in outbreaks that occur in junior or senior high schools, colleges, universities, or other secondary institutions. In an outbreak, the ACIP recommends that, in affected schools as well as unaffected schools at risk of measles transmission from students in affected schools, all students and their siblings who received their most recent dose of measles vaccine before 1980 should be revaccinated. This date was selected for several reasons: 1) this strategy will capture almost all students vaccinated between 12 and 14 months of age, a group known to be at increased risk of primary vaccine failure, since the recommended age for routine vaccination was changed from 12 to 15 months in 1976; 2) it may be easier to identify students by year of vaccination than by age at vaccination; and 3) in some outbreak investigations, students vaccinated before 1978–1980 have been found to be at increased risk for measles. This is not felt to be due to waning immunity but rather to a higher rate of primary vaccine failure in persons vaccinated before that time. This higher rate may be due to different reasons, including less than optimal vaccine storage and handling or to the greater lability of the measles vaccine manufactured before a new stabilizer was used in 1979. While the exact date has not been determined, 1980 is a conservative cutoff. If all students vaccinated before 1980 cannot be revaccinated, then persons vaccinated before 15 months of age should be targeted.

References

1. CDC. Summary of notifiable diseases—United States, 1987. MMWR 1988;36(54):53.
2. Markowitz LE, Preblud SR, Orenstein WA, et al. Patterns of transmission in measles outbreaks in the United States, 1985–1986. N Engl J Med 1989;320:75–81.
3. CDC. Measles—Dade County, Florida. MMWR 1987;36:45–8.
4. Orenstein WA, Markowitz L, Preblud SR, Hinman AR, Tomasi A, Bart KJ. Appropriate age for measles vaccination in the United States. Dev Biol Stand 1986;65:13–21.
5. Rullan JV, Pozo F, Gamble WB Jr, Jackson K, Parker RL. Measles in a highly vaccinated South Carolina school population [Abstract]. In: CDC. Proceedings of the 1987 EIS Conference. Atlanta: US Department of Health and Human Services, Public Health Service, 1987:24.
6. Hutchins SS, Markowitz LE, Mead P, et al. A selective measles revaccination policy during a school-based measles outbreak [Abstract]. In: CDC. Proceedings of the 1988 EIS Conference. Atlanta: US Department of Health and Human Services, Public Health Service, 1988:29.

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7. ACIP. Measles prevention. MMWR 1987;36:409–18,423–5.
8. Stetler HC, Orenstein WA, Bernier RH, et al. Impact of revaccinating children who initially received measles vaccine before 10 months of age. Pediatrics 1986;77:471–6.
9. Davis RM, Whitman ED, Orenstein WA, Preblud SR, Markowitz LE, Hinman AR. A persistent outbreak of measles despite appropriate prevention and control measures. Am J Epidemiol 1987;126:438–49.

Notices to Readers

Epidemiology in Action Course

CDC and Emory University will cosponsor a course designed for practicing state and local health department professionals. This course, "Epidemiology in Action," will be held at CDC May 15–26, 1989. It emphasizes the practical application of epidemiology to public health problems and will consist of lectures, workshops, classroom exercises (including actual epidemiologic problems), roundtable discussions, and an on-site community survey. For further information and/or an application form, contact: Philip S. Brachman, M.D., Emory University, Division of Public Health, 735 Gatewood Road, Atlanta, GA 30322; telephone (404) 727-0199.

Update: *Haemophilus influenzae* Type b Vaccine

On December 22, 1988, the Food and Drug Administration licensed an additional *Haemophilus* b Conjugate Vaccine for routine use in children ≥18 months of age. The manufacturer is expected to begin distribution of the *Haemophilus* b Conjugate Vaccine (Diphtheria CRM_{197} Protein Conjugate) within a few weeks. Recommendations of the Immunization Practices Advisory Committee for the use of *Haemophilus* b Conjugate Vaccine (Diphtheria Toxoid Conjugate) (*1*) are applicable to the new conjugate vaccine.

Reference

1. ACIP. Update: prevention of *Haemophilus influenzae* type b disease. MWMR 1988;37:13-6.